Gas Development In Idaho

- General information
- Location of wells
- Well Construction
- Hydraulic Fracturing
- Rulemaking

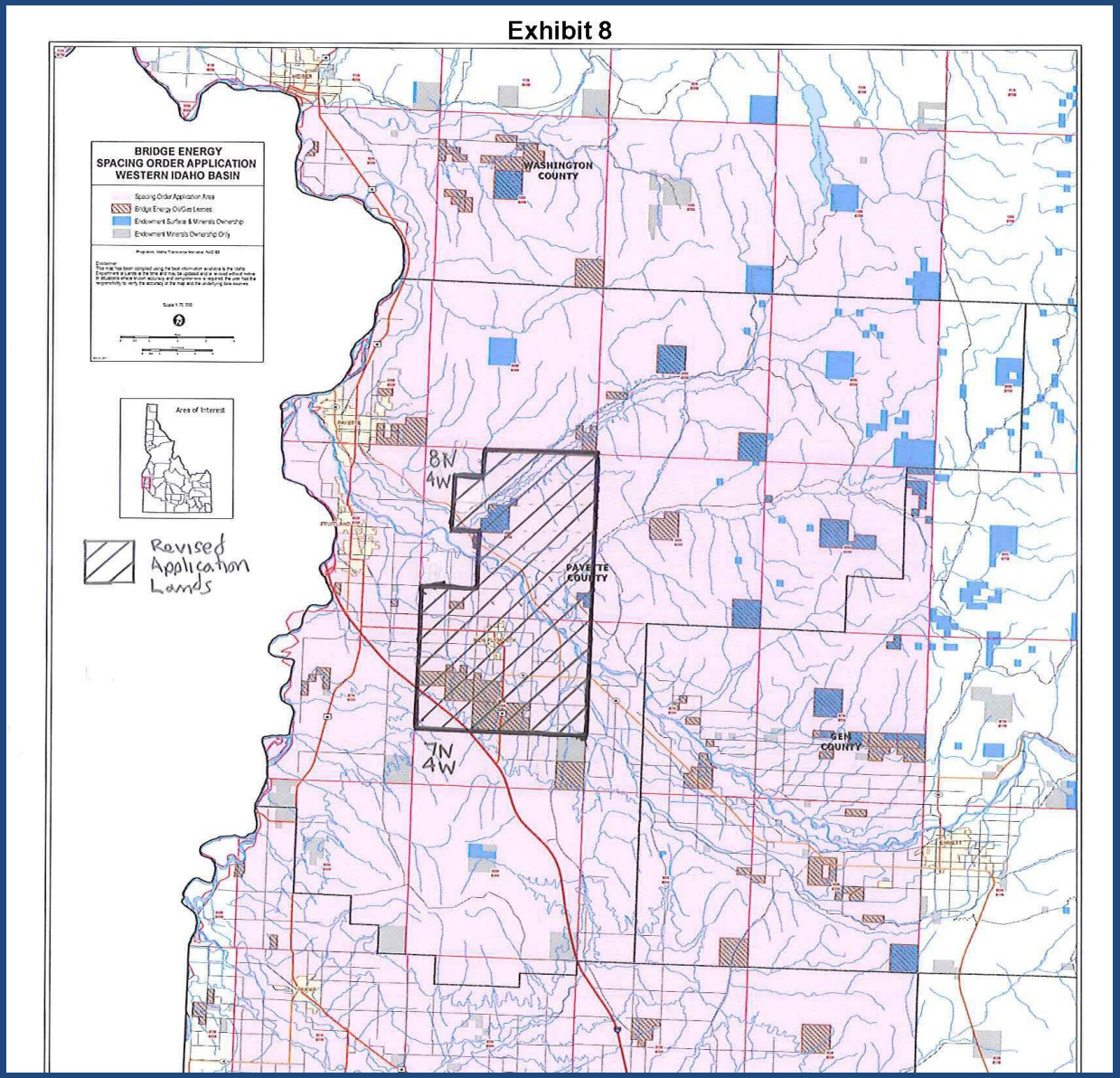
General Information

- First drilling permits issued in late 2009
- Drilling started in early 2010
- Gas discovery announced in 2010
- Seven wells can produce gas
- Four dry wells
- More drilling applications pending
- Spacing of 1 well/160 acres approved in two fields
- Temporary Rules Approved in April

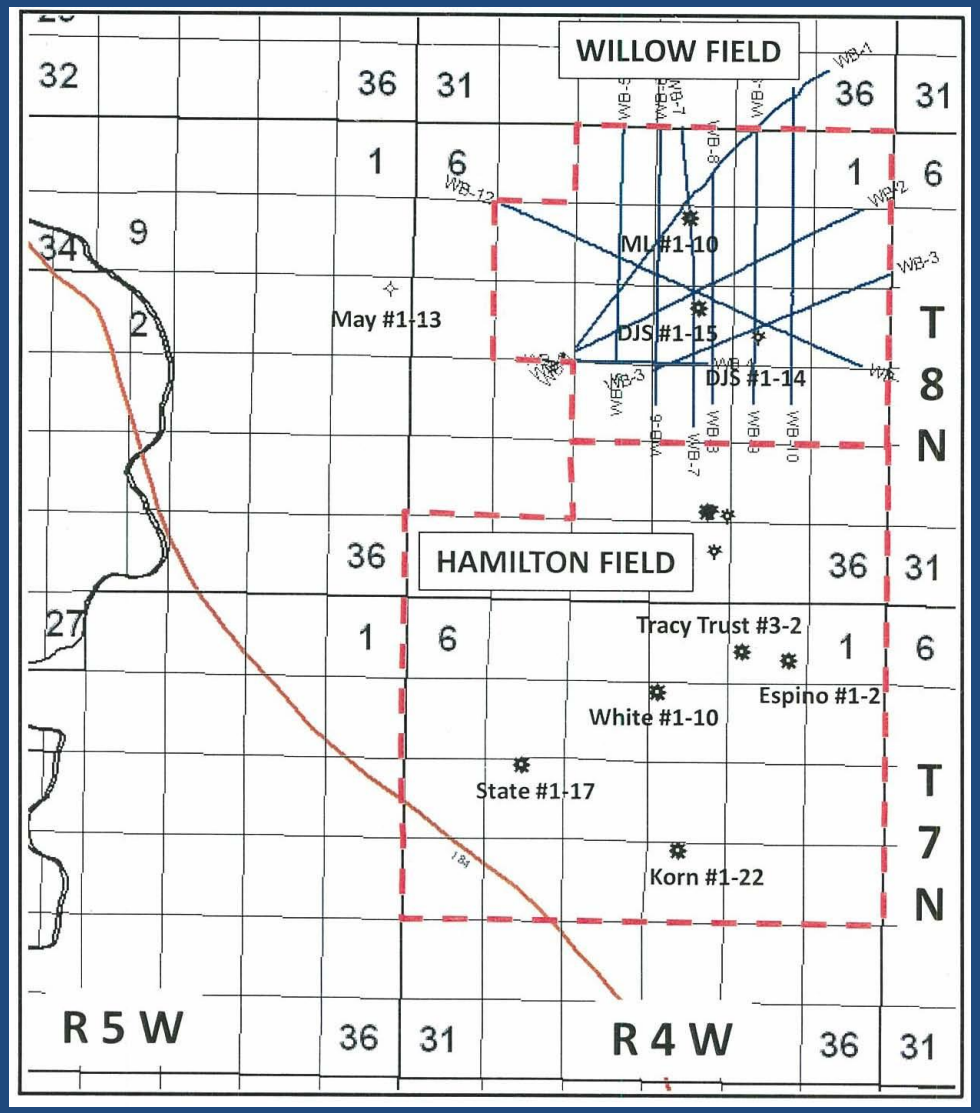
Where are the wells?

- Willow Field, roughly north of the Payette River at the lower ends of Big and Little Willow Creeks
- Hamilton Field, centered on New Plymouth
- Reservoir is in Late Miocene to Pliocene age sands, about 3 to 9 million years old

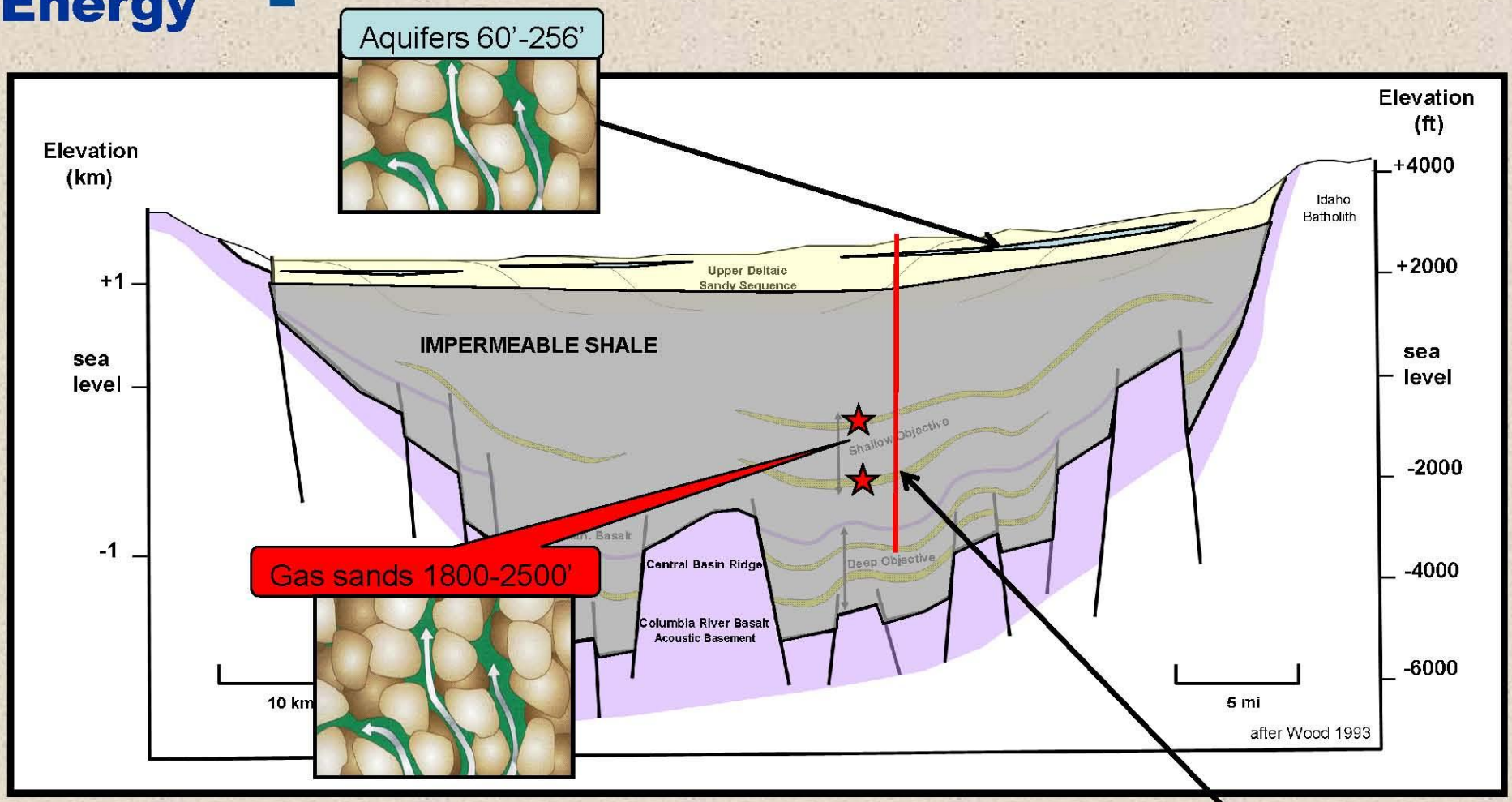
Map From Spacing Order



Map of Wells

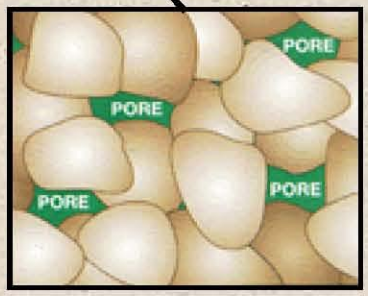

WILLOW FIELD
HAMILTON FIELD
ML #1-10
May #1-13
DJS #1-15
DJS #1-14
Tracy Trust #3-2
Espino #1-2
White #1-10
State #1-17
Korn #1-22
WB-1
WB-2
WB-3
WB-4
WB-5
WB-6
WB-7
WB-8
WB-9
WB-10
WB-12
32
36
31
1
6
9
34
2
27
T 8 N
T 7 N
R 5 W
R 4 W

BASIN CROSS SECTION

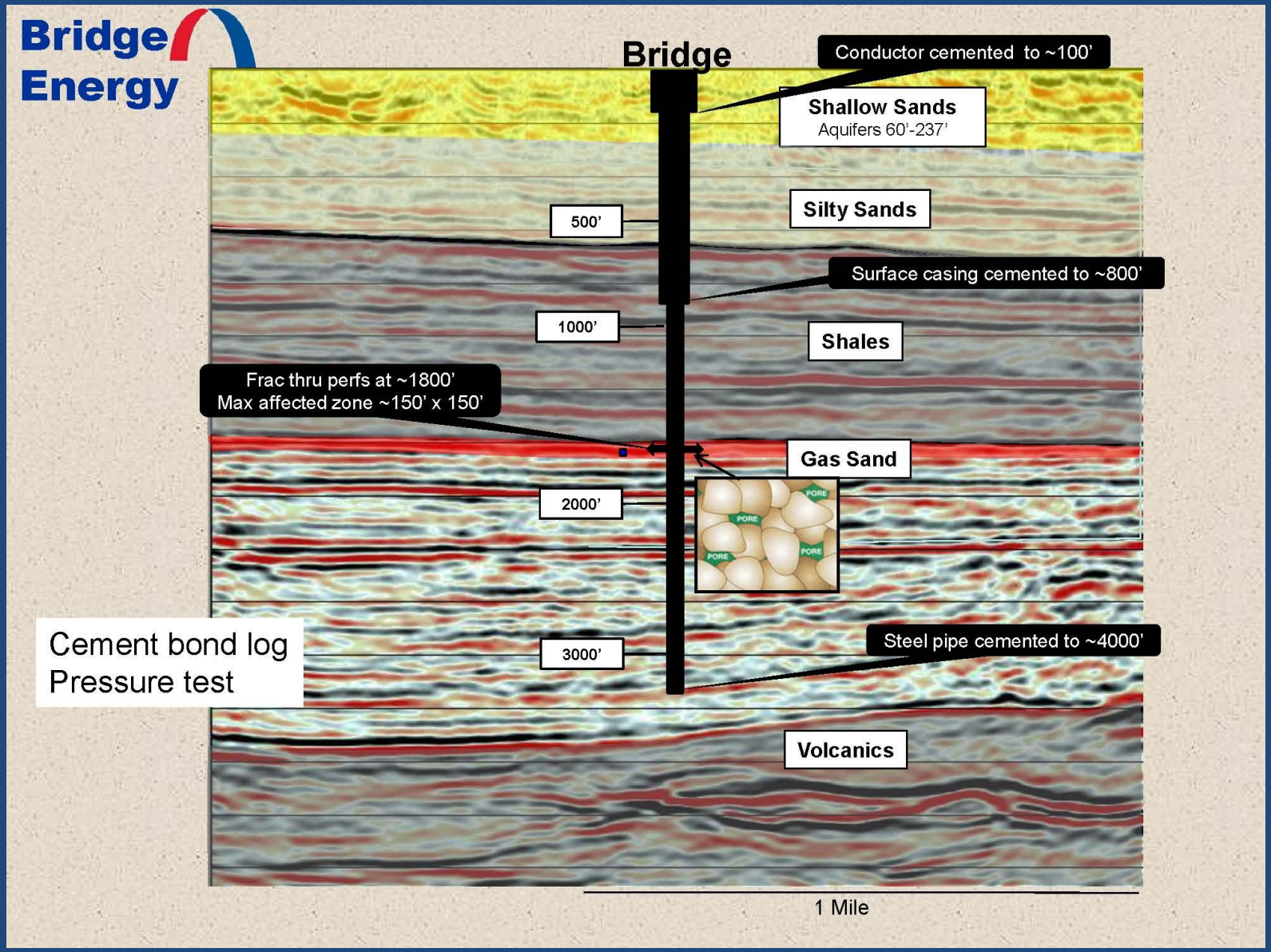


show rocks

Drilling process can block pathways in a zone nearest the borehole.



Well Construction



Bridge Energy HF Proposal

Bridge Energy

WHAT IS A FRAC?

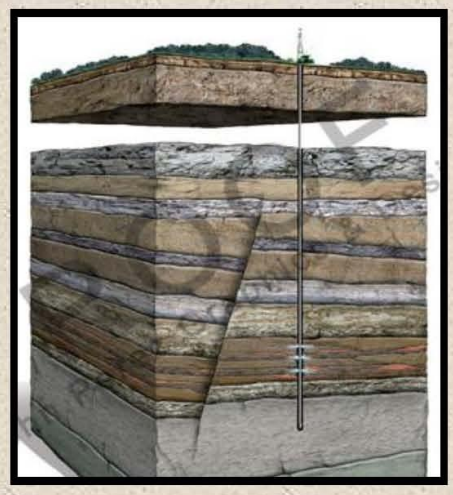
Injecting fluid + proppant (sand) into formation under pressure to restore or create pathways for gas to flow to well bore

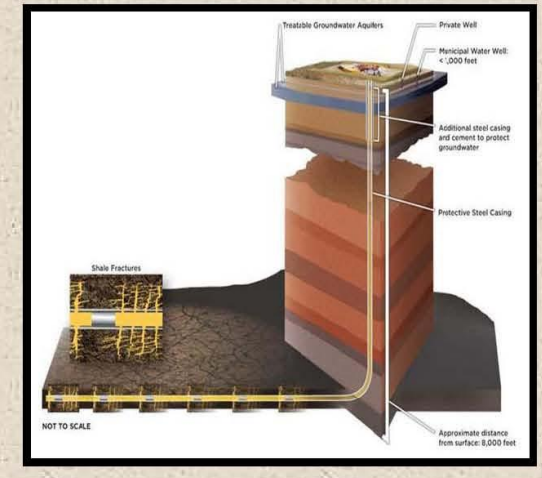
SMALL — LARGE

"Mini frac"
Rock = Conventional Sandstones
Objective = Clean out near borehole to restore existing permeability
•Vertical well, 6-26' treated
•150' fracture radius
•714 bbls fluid @ <1000 – 2400 psi
•6-8 trucks on location, ½ to 1 day

3%

"Shale Frac"
Rock = Unconventional reservoir (shale)
Objective = Create pathways for locked up Gas/oil to flow
•Horizontal well, 1000s of feet treated
•5000' fracture radius
•25,000 bbls fluid? @ 10,000 psi
•40-50 trucks on location, 7 days, 20 stages

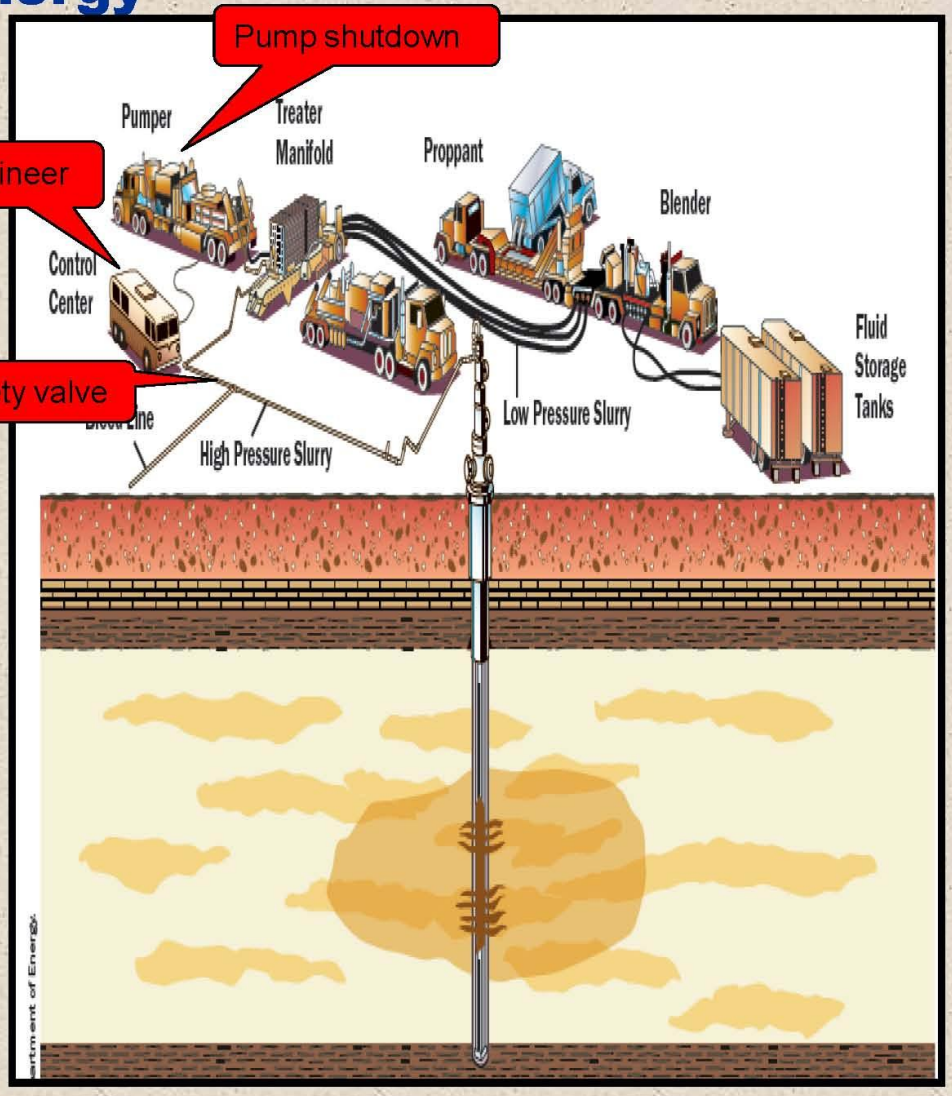




Safety Provisions

Bridge Energy

FRAC SAFETY



CALCULATE MAX PRESSURE OF STRING

6750 PSI

MAX SYSTEM PRESSURE SET AT 80%

5400 PSI

BRIDGE MINI FRAC DESIGNED AT 15-35% OF MAX

<1000 -2400 PSI

Section 055
Well Treatments and Hydraulic Fracturing

- Application and approval by IDL required
- Application must be submitted to IDL prior to any well treatment.
- IDL will deny incomplete applications.
- Proper containment of treatment fluids, including special provisions if the containment area is within the delineated recharge area for public drinking water well systems.
- Assurances regarding the integrity of the well construction and pressure tests prior to hydraulic fracturing.
- Plans to protect ground water aquifers.

Section 055 con’t.

- Disclosure of all substances used in a well treatment.
- The exclusion of all volatile organic compounds and petroleum distillates from injection into ground water during hydraulic fracturing.
- Reporting to IDL after a well treatment.
- Monitoring may be required.

Bridge Energy Ingredients

Bridge Energy

FRAC FLUID INGREDIENTS

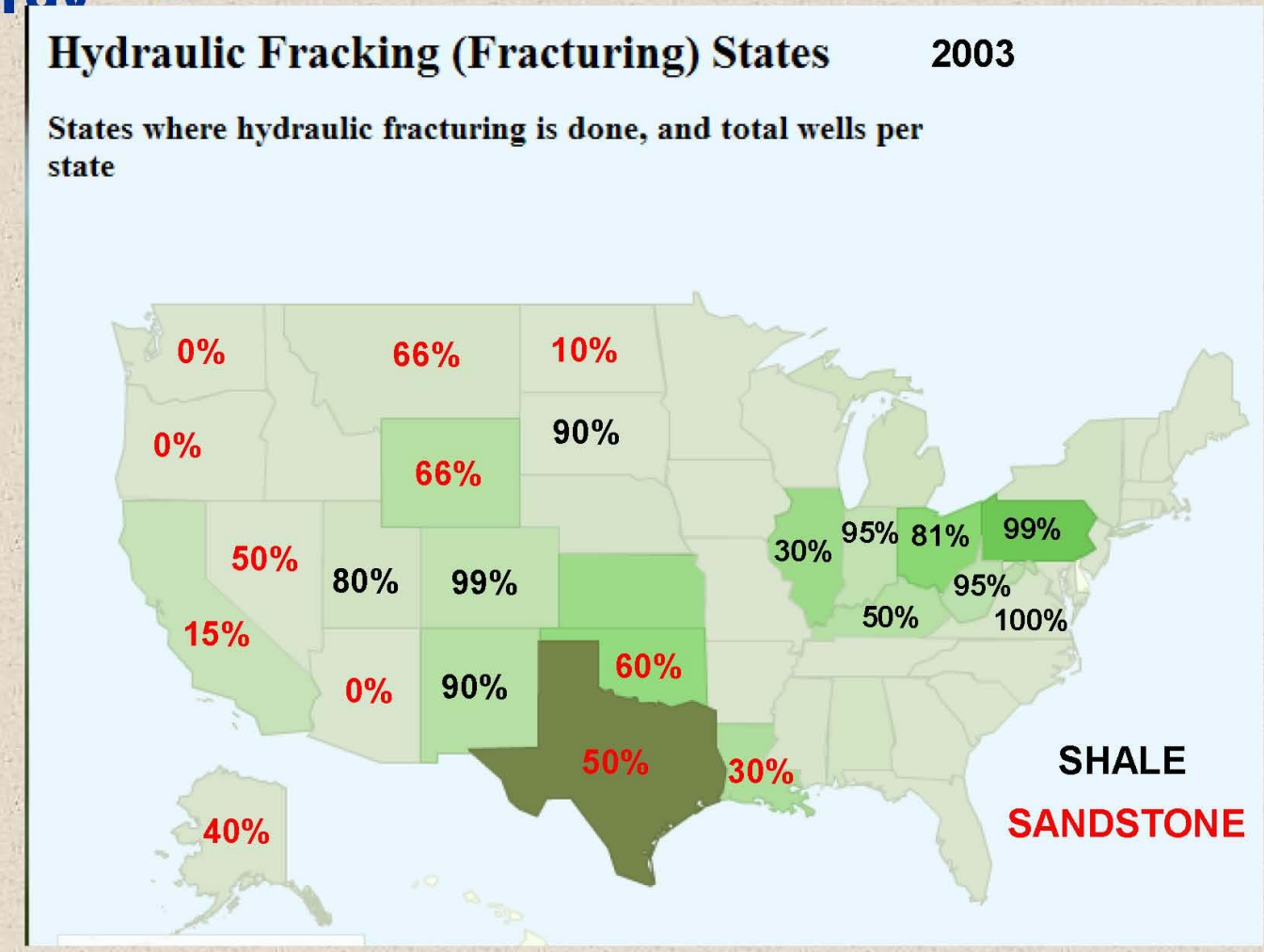
99.3% water- 1 ½ home swimming pools

0.3% Guar (legume for food thickening)

0.1% Buffer (K Hydroxide or potash)
0.1% Soap (surfactant)
0.1% Breaker (detergent enzyme)
<0.1% Boron (mineral from Mojave desert, detergent thickener)
0.02% Acetic Acid (vinegar)

HF in Other States

Bridge Energy



Other Rule Changes

- Increasing minimum bond rates for single wells and blanket bonds.
- Requiring inactive wells to be covered by an individual bond instead of a blanket bond.
- Providing basic surface owner notification and damage compensation requirements.
- Providing more comprehensive minimum standards for casing and cementing.
- Requiring liners for all pits used for fluid storage or disposal.
- Requiring all holes to be logged.

Statutory Changes

1. Increase drill application fees
2. Limit confidentiality of drill logs to one year
3. Change severance tax collection to allow the Tax Commission to collect both portions of the severance tax.
4. Update several definitions.
5. Address Class II injection wells.

Estimated Income per Well

Estimated Daily Well Production (Cubic Feet, ft^3, or cf)	Number of wells	Mcf (1,000 ft^3)	Price/Mcf (Wellhead)	Royalty/year	Tax/year	OGCC/year
1,000,000	1	1,000	$4.39	12.50%	2%	0.50%
				$ 200,293.75	$ 32,047.00	$ 8,011.75
1 Mcf = 1,000,000 Btu = MMBtu						
1 Mcf = 10 therms						